AMENDMENTS TO THE DRAWINGS

A replacement drawing sheet with FIGURE 2A and FIGURE 2B is attached herewith. FIGURE 2A and FIGURE 2B have been revised to indicate the regions of the illustrated protein by reference numeral. Reference numerals have been added to these figures.

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REMARKS

Claims 1-85 are pending in the application. Claims 3, 5, 10-15, and 26-85 have been withdrawn from consideration. Claims 1, 2, 4, 6-9, 16-20, and 22-25 are rejected. Claims 8, 9, and 21 are objected to. Claim 1 has been amended. Reconsideration of Claims 1, 2, 4, 6-9, and 16-25 in view of the above amendments and the following remarks is respectfully requested.

Amendment to Specification and Drawings

The Examiner objects to the drawings for including colored figures. The Examiner objects to the specification for referring to colors in the drawings and for containing embedded hyperlinks and other form of browser-executable code.

A replacement drawing sheet with FIGURE 2A and FIGURE 2B is attached herewith. FIGURE 2A and FIGURE 2B have been revised to indicate the regions of the illustrated protein by reference numeral. Reference numerals have been added to these figures. The specification has been similarly amended. No new matter has been introduced.

In addition, all embedded hyperlinks have been deleted from the specification. Withdrawal of the rejection is respectfully requested.

The Objection of Claim 21

Claim 21 was objected to as being of improper dependent form. Withdrawal of the objection is requested for the following reasons.

According to the Examiner, Claim 21 recites the limitation "wherein said I-FABSDAM is also attached to said particle," and Claim 20 already recites the term I-FABSDAM which are attached to prokaryotic and eukaryotic particles of Claim 20. The Examiner concludes that Claim 21 is of improper dependent form. Applicants respectfully disagree.

Claim 21 depends from Claim 20. Claim 20 depends from Claim 1.

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Claim 1 recites a method for changing binding strength of an I-FABSDAM to a FABSDB-L for the I-FABSDAM, including the steps of binding the I-FABSDAM with the FABSDB-L, and changing a bond stress on the I-FABSDAM, wherein the binding strength between the I-FABSDAM and the FABSDB-L increases when the bond stress increases and decreases when the bond stress decreases.

Claim 20 recites the method of Claim 1 wherein FABSDB-L is attached to a particle selected from the group consisting of bacterial pili, isolated molecules, synthetic molecules, proteins, polypeptides, organelles, prokaryotic cells to which said I-FABSDAM is not native, eukaryotic cells to which said I-FABSDAM is not native, viruses, organisms, nanoparticles, microparticle and microbeads or a surface selected from the group consisting of cell membranes, device surfaces and synthetic substrate surfaces.

Contrary to the Examiner's statement, Claim 21 recites the method of Claim 20 wherein the I-FABSDAM is attached to said particle.

Therefore, Applicants submits that Claim 21 further limits Claim 20, therefore, is in proper dependent form. Withdrawal of the rejection is respectfully requested.

The Rejection of Claims 1 and 20 under 35 U.S.C. §112, Second Paragraph

Claim 1 stands rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential elements. Claim 1 recites a method for changing binding strength of an I-FABSDAM to a FABSDB-L by changing a bond stress on the I-FAMSDAM. According to the Examiner, Claim 1 only provides the adhesion molecule and that the second essential element of the bond stress relationship, a ligand, is missing. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as lacking antecedent basis. According to the Examiner, the two recited species, "prokaryotic cells to which said I-FABSDAM is not native" and "eukaryotic

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cells to which said I-FABSDAM is not native," do not find antecedent basis in the FABSDA-L. Withdrawal of the rejection is requested for the following reasons.

Claim 1 has been amended. As amended, Claim 1 recites a method for changing binding strength of an I-FABSDAM to a FABSDB-L for the I-FABSDAM, including the steps of binding the I-FABSDAM with the FABSDB-L, and changing a bond stress on the I-FAMSDAM, wherein the binding strength between the I-FABSDAM and the FABSDB-L increases when the bond stress increases and decreases when the bond stress decreases. Applicants submit that Claim 1 as amended clarifies the bond stress relationship between the adhesion molecule and the ligand. Withdrawal of the rejection is respectfully requested.

Claim 20 depends from Claim 1. Claim 20 recites the method of Claim 1 wherein said FABSDB-L is attached to a particle selected from the group consisting of bacterial pili, isolated molecules, synthetic molecules, proteins, polypeptides, organelles, prokaryotic cells to which said I-FABSDAM is not native, eukaryotic cells to which said I-FABSDAM is not native, viruses, organisms, nanoparticles, microparticle and microbeads or a surface selected from the group consisting of cell membranes, device surfaces and synthetic substrate surfaces.

Claim 1 has provided antecedent basis for both I-FABSDAM and FABSDB-L. Claim 20 recites that the FABSDB-L is attached to a particle. Among the particles listed in Claim 20 are two cited species in question, i.e. "prokaryotic cells to which said I-FABSDAM is not native" and "eukaryotic cells to which said I-FABSDAM is not native." The recitation that "said I-FABSDAM is not native" refers to the I-FABSDAM recited in Claim 1. Therefore, Claim 20 has proper antecedent basis for all the limitations in the claim. Withdrawal of the rejection is respectfully requested.

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The Rejection of Claims 1, 2, 4, 6-9, 16-20, and 22-25 under 35 U.S.C. §102(b)

Claims 1, 2, 4, 6-9, 16-20, and 22-25 are rejected under 35 U.S.C. §102(b) as being anticipated by WO 97/18790, issued to Pascual et al., and Spevak et al., *J. Med. Chem. 39*:1018-1020, 1996. Withdrawal of the rejection is requested for the following reasons.

As noted above, Claim 1 is an independent claim that relates to a method for changing binding strength of an I-FABSDAM to a FABSDB-L. Claims 2, 4, 6-9, 16-20, and 22-25 depend from Claim 1.

The Pascual reference relates to therapeutic peptides, vaccines, and diagnostic agents for the treatment of pathogenic infections. The reference discloses a therapeutic peptide comprising a molecule that mimics the adhesion molecule of a pathogen and interacts with receptor molecules of a cell selected from the group consisting of leukocytes, endothelial cells, epithelial cells and other target cells of the host, and the therapeutic peptide molecule may react specifically with receptor (ligands) of host adhesion molecule (page 3, lines 28-34).

The Spevak reference discloses synthetic carbohydrates in acidic multivalent assembly as nanomolar P-selectin inhibitors. The high-affinity P-selectin inhibitors are prepared from polymerized glycoliposomes with an acidic matrix lipid. The inhibitors are capable of preventing binding between the adhesion molecule and its corresponding ligand.

Neither the Pascual reference nor the Spevak reference describes every element of Claim 1, as amended. Each reference discloses the ability of molecules to block adhesion between two biological molecules, and possibilities of using this phenomenon to develop new therapeutic agent. The Spevak reference teaches the synthesis of macromolecules with inhibitory activity toward P-selectin. The Pascual reference teaches development of active reagents for treatment of microbial infection by blocking microbial adhesion events. However, neither reference teaches binding an isolated force-activated stress-dependent adhesion molecule

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(I-FABSDAM) to a force-activated bond stress-dependent binding ligand (FABSDB-L), changing the bond stress on the I-FABSDAM, and that the binding strength between the I-FABSDAM and the FABSDB-L increases when the bond stress increases and decreases when the bond stress decreases, as required in Claim 1.

Because the cited references do not exactly describe the invention as now claimed, the references are not anticipatory. Withdrawal of the rejection is respectfully requested.

The Rejection of Claims 1-2, 4, 6-9, 16-20, and 22-25 under 35 U.S.C. §102(e)

Claims 1, 2, 4, 6-9, 16-20, and 22-25 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. PG Pub. 2004/0247611, by Bargatze et al. Withdrawal of the rejection is requested for the following reasons.

As noted above, Claim 1 relates to a method for changing binding strength of an I-FABSDAM to a FABSDB-L. Claims 2, 4, 6-9, 16-20, and 22-25 depend from Claim 1.

The Bargatze reference discloses assays for identifying pathogen-ligand interactions under shear conditions. In addition, the reference discloses the pathogen adhesion molecules and peptides identified by using the assays. The assays disclosed in the reference use the interaction between the pathogen adhesion molecule and its corresponding ligand to identify a pathogen.

The Bargatze reference fails to describe every element of the claimed invention. The reference describes the phenomenon that a pathogen adhesin can bind to cellular receptors in the presence of fluid shear stress [0061], and uses this natural phenomenon to identify pathogen. The reference also describes the ability of leukocytes to bind in shear than in static conditions when selectins are a receptor [0070]. However, the reference fails to disclose an isolated force-activated stress-dependent adhesion molecule (I-FABSDAM) or a force-activated bond stress-dependent binding ligand (FABSDB-L), as required in the claimed invention.

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Because the cited reference does not exactly describe the invention as now claimed, the reference is not anticipatory. Withdrawal of the rejection is respectfully requested.

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The Rejection of Claims 1, 2, 4, 6, and 7 under 35 U.S.C. §102(b)

Claims 1, 2, 4, 6, and 7 are rejected under 35 U.S.C. §102(b) as being anticipated by Brooks et al., *Annals New York Academy of Sciences*, 319-331, 1983. Withdrawal of the rejection is respectfully requested for the following reasons.

As noted above, Claim 1 relates to a method for changing binding strength of an I-FABSDAM to a FABSDB-L. Claims 2, 4, 6, and 7 depend from Claim 1.

The Brooks reference describes the attachment mechanisms employed by pathogens. Specifically, the reference discloses interactions of erythrocytes with bacteria under shear. However, the reference does not disclose an isolated force-activated stress-dependent adhesion molecule (I-FABSDAM) or a force-activated bond stress-dependent binding ligand (FABSDB-L), as required in the claimed invention.

Because the cited reference does not exactly describe the invention as now claimed, the reference is not anticipatory. Withdrawal of the rejection is respectfully requested.

Rejoinder of Claims 3, 5, 10-15, 26-42, and 85

Applicants have elected the invention of Group I, Claims 1-42 and 85, for examination. Because the claims directed to the elected species, Claims 1, 2, 4, 6-9, 16-20, and 22-25, are patentable over the cited references, rejoinder and allowance of Claims 3, 5, 10-15, 26-42, and 85 directed to non-elected species, is requested.

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CONCLUSION

Applicants believe that Claims 1-42 and 85 are in condition for allowance. If any issues remain that may be expeditiously addressed in a telephone interview, the Examiner is encouraged to telephone applicants' attorney at 206.695.1755.

Respectfully submitted,

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